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Gardner, Robert B. [Gardner, Robert Bentley]
Near-rotational directed triple systems. (English summary)
Ars Combin. **38** (1994), 137–143.

A directed triple system of order v, denoted by DTS(v), is a v-element set X of points, together with a set β of ordered triples of elements of X called blocks, such that any ordered pair of points of X occurs in exactly one block of β. A DTS(v) is said to be k-near-rotational if it admits an automorphism which consists of precisely three fixed points and k cycles of length $(v-3)/k$. Using a direct construction method, the author shows that there exist k-near-rotational DTS(v)'s for $k=1$ and $v \equiv 1 \pmod 3$ and for $k=3$ and $v \equiv 0 \pmod 3$. This completely determines the existence of k-near-rotational DTS(v)'s; a k-near-rotational DTS(v) exists if and only if $k(v+2) \equiv 0 \pmod 3$, $v \equiv 3 \pmod k$, $v \equiv 0$ or $1 \pmod 3$, $v \geq 7$. *Chung Je Cho*